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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,195	12/11/2003	Christopher D. Brown	P0063.US1	8313

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EXAMINER	
DOUGHERTY, ANTHONY T	
ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/733,195	BROWN, CHRISTOPHER D.	
	Examiner	Art Unit	
	Anthony T. Dougherty	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/13/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-26, 29, and 30 rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,568,400 to Stark et al.

With regard to claim 1, Stark et al. discloses a method of correcting a measurement of a sample (see abstract), by determining a variation of a component of several measurements of a reference where the variation does not rely upon changes in the reference (see column 6 line 1-16), determining a similar sample variation of components of measurements of samples that are similar to the measurement of the sample (see column 6 line 17-29), determining whether the reference measurement variation is similar to the similar sample measurement variation (see column 6 line 17-18), and if so adjusting the measurement of the sample by correcting for the portion of the component corresponding to the similar sample variation that corresponds to the reference measurement variation (see column 6 line 30-36).

With regard to claim 2, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a component of several spectral measurements of a reference (see column 8 line 30-33).

With regard to claim 3, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a sensor output (see column 11 line 51-54).

With regard to claim 4, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a combination of sensor output and a component of several spectral measurements of a reference (see column 6 line 1-6).

With regard to claim 5, and applying the rejection of claim 1 above, Stark et al. discloses the components of measurements of samples comprise spectral data at a specific wavelength (see column 7 line 55-57).

With regard to claim 6, and applying the rejection of claim 1 above, Stark et al. discloses the components of measurements of samples comprise combination of spectral data at specific wavelengths (see column 7 line 46-61).

With regard to claim 7, and applying the rejection of claim 1 above, Stark et al. discloses the components of measurements of samples comprise a physical property of a sample (see column 6 line 1-6).

With regard to claim 8, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a physical property of the reference (see column 6 line 1-6).

With regard to claim 9, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a property of the measurement environment (see column 9 line 45-67).

With regard to claim 10, and applying the rejection of claim 1 above, Stark et al. discloses the component of several measurements of a reference comprises a measurable characteristic of spectral data (see column 10 line 1-4).

With regard to claim 11, and applying the rejection of claim 1 above, Stark et al. discloses the components of measurements of samples comprise a measurable characteristic of spectral data (see column 11 line 51-54).

With regard to claim 12 Stark et al. discloses a method of correcting a measurement of a sample taken with a measurement device (see abstract), by determining a reference variation of a component of a measurement of a reference (see column 6 line 1-6), identifying similarity components of a number of measurements of samples similar to the sample performed with the measurement device that vary in similar fashion to the reference variation (see column 6 line 17-

29), and correcting the measurement of the sample by adjusting the similarity components in the sample measurement (see column 6 line 30-36).

With regard to claim 13 Stark et al. discloses a method of correcting a measurement of a sample (see abstract), by determining a reference component variation of a component of several measurements of a reference where the reference component variation does not substantially rely on changes in the reference (see column 6 line 1-16), determining a similar subject variation of components of measurements of subjects that are similar to the measurement of the sample (see column 6 line 17-29), determining whether the reference component variation is similar to the similar subject component variation (see column 6 line 17-18), and if so adjusting the measurement of the sample by ignoring the component corresponding to the similar subject variation that corresponds to the reference variation (see column 6 line 30-36).

With regard to claim 14, and applying the rejection of claim 13 above, Stark et al. discloses ignoring the component comprises identifying the component as not to be used in subsequent use of the sample measurement (see column 9 line 13-25).

With regard to claim 15, and applying the rejection of claim 13 above, Stark et al. discloses ignoring the component comprises communicating the component such that subsequent use of the sample measurement is substantially insensitive to the component (see column 9 line 13-25).

With regard to claim 16 Stark et al. discloses a method of adjusting a measurement of a subject system taken under a subject measurement conditions (see abstract), by providing a set of reference measurements captured under a first plurality of measurement conditions including the subject measurement condition (see column 6 line 1-16), providing a set of similar system measurements taken under a second plurality of measurement conditions using systems having responses similar to the subject system, the set of similar measurements including the subject system measurement (see column 6 line 17-29), determining a set of reference measurement components of the reference measurements that change independently of changes in the reference (see column 6 line 1-16), determining a set of system components of the similar system measurements that do not vary in a manner similar to the manner in which the reference measurement components vary (see column 6 line 17-29), and determining the adjusted measurement of the subject system from the portion of the system components that correspond to the measurement of the subject system (see column 6 line 30-36).

With regard to claim 17 Stark et al. discloses a method of determining the spectroscopic response of a system from a first spectrum determined under a first set of measurement conditions (see abstract), by accessing data related to a plurality of reference spectra captured under a plurality of measurement conditions by measurement of a reference (see column 6 line 1-16), determining one or more reference spectra components of variation in the reference spectra that do not correspond to variation in the reference (see column 6 line 1-16), determining a predicted change for the first spectrum from the reference spectra changes (see column 13 line 1-

18), and determining the spectroscopic response by adjusting the first spectrum to reduce the contribution of the predicted change (see column 15 line 1).

With regard to claim 18, and applying the rejection of claim 1 above, Stark et al. discloses the similar samples are the sample (see column 11 line 51-54).

With regard to claim 19, and applying the rejection of claim 12 above, Stark et al. discloses the similar samples are the sample (see column 11 line 51-54).

With regard to claim 20, and applying the rejection of claim 16 above, Stark et al. discloses the similar systems are the subject system (see column 11 line 51-54).

With regard to claim 21 Stark et al. discloses a method of making a measurement using a measurement device (see abstract), by storing a plurality of reference spectra of a reference system with a known spectroscopic response captured using the measurement device in a first corresponding plurality of measurement conditions (see column 6 line 1-16), separating the plurality of reference spectra into environment components that vary with the measurement conditions and system components that do not vary with the measurement conditions (see column 13 line 23-29), storing a plurality of sample spectra of sample systems captured using the measurement device in a second plurality of measurement conditions comparable to the first plurality of measurement conditions (see column 6 line 17-29), observing components of the plurality of sample spectra that relate to the environment components (see column 13 line 23-

29), and using the related components to make a measurement with the measurement device (see column 11 line 51-56).

With regard to claim 22 Stark et al. discloses a method of correcting a measurement of a sample using a collection of measurements of a reference and a collection of measurements of subjects similar to the sample, the collection of reference measurements corresponding in time to the collection of subject measurements (see abstract), by organizing the collection of reference measurements into a first matrix and the collection of subject measurements into a second matrix, the first and second matrices being organized so that measurements in the first matrix correspond in time with measurements of the second matrix (see column 8 line 28-65), determining the first matrix components of measurement variation from their first matrix measurement effects (see column 9 line 20-25), estimating a present reference spectrum element from the present reference measurement and the first matrix measurement effects of the components of variation (see column 13 line 1-18), determining a present measurement artifact element as the product of the present reference spectrum element transposed, the generalized inverse of the matrix of components of measurement variation of the first matrix, and the second matrix (see column 14 line 55-67), and subtracting an aspect of the present measurement artifact element from the measurement of the sample (see column 15 line 1).

With regard to claim 23, and applying the rejection of claim 22 above, Stark et al. discloses first matrix measurement effects of components of variation are known from other measurements (see column 13 line 23-29).

With regard to claim 24, and applying the rejection of claim 22 above, Stark et al. discloses the first matrix measurement effects of components of variation are determined by decomposition of some or all of the first matrix into components of variation and measurement effects (see column 13 line 30-50).

With regard to claim 25, and applying the rejection of claim 24 above, Stark et al. discloses first matrix is decomposed using singular value decomposition (see column 19 line 40-42).

With regard to claim 26, and applying the rejection of claim 24 above, Stark et al. discloses the first matrix is decomposed using principal components analysis (see column 18 line 34-35).

With regard to claim 29 Stark et al. discloses a method of adjusting a measurement of a sample (see abstract), by determining a change in a reference measurement, wherein the change is due to a cause (see column 6 line 1-16), determining a projected effect of the cause on the measurement of a sample (see column 6 line 35), adjusting the measurement of a sample to reduce the projected effect's contribution to the adjusted measurement (see column 6 line 31-37).

With regard to claim 30, and applying the rejection of claim 1 above, Stark et al. discloses the sample comprises human tissue (see column 11 line 62-64).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,568,400 to Stark et al. in view of U.S. Patent No. 5,682,152 to Wang et al.

The primary reference to Stark et al. discloses With regard to claim 22 Stark et al. discloses a method of correcting a measurement of a sample using a collection of measurements of a reference and a collection of measurements of subjects similar to the sample, the collection of reference measurements corresponding in time to the collection of subject measurements (see abstract), by organizing the collection of reference measurements into a first matrix and the collection of subject measurements into a second matrix, the first and second matrices being organized so that measurements in the first matrix correspond in time with measurements of the second matrix (see column 8 line 28-65), determining the first matrix components of measurement variation from their first matrix measurement effects (see column 9 line 20-25), estimating a present reference spectrum element from the present reference measurement and the first matrix measurement effects of the components of variation (see column 13 line 1-18), determining a present measurement artifact element as the product of the present reference spectrum element transposed, the generalized inverse of the matrix of components of

measurement variation of the first matrix, and the second matrix (see column 14 line 55-67), and subtracting an aspect of the present measurement artifact element from the measurement of the sample (see column 15 line 1), and the first matrix measurement effects of components of variation are determined by decomposition of some or all of the first matrix into components of variation and measurement effects (see column 13 line 30-50). However, Stark et al. fails to disclose the first matrix is decomposed using wavelet transforms.

The secondary reference to Wang et al. discloses matrix decomposition using wavelet transforms (see column 3 line 14-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have specified the method of decomposing a matrix of Stark et al. be done using wavelet transforms as taught by Wang et al.

Accordingly, such a modification would have been obvious since Wang et al. teaches wavelet transforms are a sufficient method for decomposing a matrix (see Wang et al. column 3 line 14-24), thereby suggesting the obviousness of the modification.

5. Claim 28 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,568,400 to Stark et al. in view of U.S. Patent No. 6,694,020 to Benesty.

The primary reference to Stark et al. discloses With regard to claim 22 Stark et al. discloses a method of correcting a measurement of a sample using a collection of measurements of a reference and a collection of measurements of subjects similar to the sample, the collection of reference measurements corresponding in time to the collection of subject measurements (see

abstract), by organizing the collection of reference measurements into a first matrix and the collection of subject measurements into a second matrix, the first and second matrices being organized so that measurements in the first matrix correspond in time with measurements of the second matrix (see column 8 line 28-65), determining the first matrix components of measurement variation from their first matrix measurement effects (see column 9 line 20-25), estimating a present reference spectrum element from the present reference measurement and the first matrix measurement effects of the components of variation (see column 13 line 1-18), determining a present measurement artifact element as the product of the present reference spectrum element transposed, the generalized inverse of the matrix of components of measurement variation of the first matrix, and the second matrix (see column 14 line 55-67), and subtracting an aspect of the present measurement artifact element from the measurement of the sample (see column 15 line 1), and the first matrix measurement effects of components of variation are determined by decomposition of some or all of the first matrix into components of variation and measurement effects (see column 13 line 30-50). However, Stark et al. fails to disclose the first matrix is decomposed using wavelet transforms.

The secondary reference to Benesty discloses matrix decomposition using fourier transforms (see column 9 line 65 through column 10 line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have specified the method of decomposing a matrix of Stark et al. be done using fourier transforms as taught by Benesty.

Accordingly, such a modification would have been obvious since Benesty teaches fourier transforms are a sufficient method for decomposing a matrix (see Benesty column 9 line 65 through column 10 line 5), thereby suggesting the obviousness of the modification.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,580,510 to Nawracala because it teaches a self-calibrating interference spectroscopy instrument.

U.S. Patent No. 5,435,309 to Thomas et al. because it teaches wavelength selection for multivariate spectral analysis on human tissue.

U.S. Patent No. 5,291,426 to Collins et al. because it teaches correcting spectral measurements by subtracting measured background signals.

U.S. Patent No. 6,546,378 to Cook because it teaches several methods of matrix decomposition.

European Patent Application No. EP 658,751 A2 to Cahill because it teaches calibrating a spectrometric instrument using a variety of wavelengths for measuring and subtracting background measurements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Dougherty whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday through Friday from 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atd

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